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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,234	10/19/2000	HIROSHI TSUJI	862.C2032	5023

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EXAMINER

BERMAN, JACK I

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 08/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/691,234

Applicant(s)

TSUJI ET AL.

Examiner

Jack I. Berman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Claim 10 is objected to because of the following informalities: Line 3 of claim 10 refers to "the surface plate", but the only antecedent basis for "the surface plate" is in dependent claim 8 while claim 10 depends directly from independent claim 7. Appropriate correction is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The location of the leakage magnetic field shield between the magnetic force generator and the electron beam column is critical or essential to the practice of the invention, but not included in the claim(s), which is therefore not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Claim 10 requires that the distance between the magnetic force generator and the surface plate be greater than the distance between the leakage magnetic field shield and the surface plate. If this relationship was maintained, the leakage magnetic field shield would not shield the electron beam from the magnetic field produced by the magnetic force generator because the shield would be on the same side of the magnetic force generator as the surface plate, which is on the opposite side of the magnetic force generator from the electron beam column. From the discussion beginning on page 19 of the specification and based upon Figures 9 and 10 of the drawings, it appears that the parameter t2 represents the distance between the surface plate and an edge portion of the leakage magnetic field shield, not between the surface plate and the shield as a whole.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7-9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Petric.

Petric discloses an electron beam lithography apparatus comprising an electron beam column (or electron optical lens barrel) 10 having electron lenses for converging the electron beam and deflectors for deflecting the beam, a platen (surface plate) 9 which supports a sample stage 30 by means of an air bearing, a magnetic force generator (either a linear reluctance motor or a linear inductance motor as is discussed from line 38 in column 6 through line 4 in column 8), and a leakage magnetic field shield located outside the magnetic force generator for shielding the magnetic field leaking from the magnetic force generator (see lines 19-44 in column 9). Petric also teaches to place a sample on the stage and directly draw a pattern on the sample using the electron beam.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markle in view of Petric. Markle discloses a moving stage 600 comprising a magnetic constraint structure, which may include a Halbach array of permanent magnets 798 attached to the stage, and a plurality of driving coils 500, 502, 812, 814, 816, and 818 which function to drive the stage. At lines 50 in column 15 through 8 in column 16, Markle teaches that this stage can be used with electron beam lithography apparatus, but in order to do so without interfering with the electron

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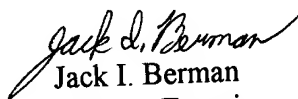
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beam, two magnetic shields must be provided: the first shield 822 between the electron beam source (not shown) and the wafer to be drawn on (which inherently shields magnetic fields leaking from the electron optical lens-barrel used to form the beam into the internal space in the sample chamber); and a second shield 824 to shield a leakage magnetic field from the magnetic constraint structure (magnets 798 and coils 500, 502, 812, 814, 816, and 818) from leaking into the internal space of the sample chamber where the wafer 602 is located. While Markle does not describe any of the electron optics used to form and control the electron beam 820, it would have been obvious to a person having ordinary skill in the art to use the known electron column 10 illustrated in the Petric patent to control the beam by lenses and deflectors since such control is well known in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (703) 308-4849. The examiner can normally be reached on M-F (8:30-6:00) with every second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703) 308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Jack I. Berman
Primary Examiner
Art Unit 2881

jb

August 16, 2002